*Perceptual and Motor Skills*, 1994, 79, 1527-1531. © Perceptual and Motor Skills 1994

# ELEVATED INCIDENCE OF A SENSED PRESENCE AND SEXUAL AROUSAL DURING PARTIAL SENSORY DEPRIVATION AND SENSITIVITY TO HYPNOSIS: IMPLICATIONS FOR HEMISPHERICITY AND GENDER DIFFERENCES [1]

S. G. TILLER AND M. A. PERSINGER

*Laurentian University*

*Summary.*—As predicted by the vectorial cerebral hemisphericity hypothesis, 24 normal young women reported significantly more experiences of a "presence" than did 24 normal young men within a setting that emphasized hypnosis and partial sensory deprivation. The incidence of these experiences was positively correlated with scores on Spiegel's Hypnosis Induction Profile, while the attribution of the chamber experiences to ego-alien sources was correlated with the magnitude of (Vingiano's) right hemisphericity for the women only. Both sexes exhibited a significant association between the experience of a presence and sexual arousal.

If the experience of "a presence" during periods of decreased sensory input, e.g., late at night or within quiet environments such as caves or cathedrals, is the left-hemispheric awareness of the intrusion of the right-hemispheric equivalent of the sense of self (Persinger, 1993), then individuals who are prone to greater electrical coherence (Corsi-Cabrera, Herrera, & Malvido, 1989) between the left and right temporoparietal lobes should report more of these episodes. Gender differences in the subtle organization of the left and right temporoparietal lobes and their interface through the corpus callosum have been reported (Corsi-Cabrera, *et al.*, 1989; de Lacosta-Utamsing & Holloway, 1982). If our hypothesis is correct, then normal women should report more frequent episodes of "a sensed presence" relative to normal men when placed within partial sensory deprivation.

To test this hypothesis a total of 24 men and 24 women who were first-year university students (18 to 25 years of age) volunteered to be subjects; a 2% bonus mark for the final course grade served as the reward. Each subject was exposed to a paradigm that facilitated imagery and relaxation. The subject sat with eyes covered within a darkened acoustic chamber while a fixed pattern of burst firing magnetic fields (1-2 microT), which has been designed to simulate the nonlinear characteristics and temporal cascades of aggregates of limbic neurons, was presented by computer for 1 sec. every 3 sec. over one of the temporal lobes (Richards, Persinger, & Koren, 1993). This pattern was expected to increase the coherence and activation capacity of amygdaloid-hippocampal neurons.

In the present study, after the protocol had been approved by the de-

[1]Please send reprint requests to Dr. M. A. Persinger, Behavioral Neuroscience Program, Department of Psychology, Laurentian University, Ramsey Lake Road, Sudbury, Ontario, Canada P3E 2C6.

partmental ethics committee, each subject was exposed twice (20 min. each) to the same field pattern. One exposure was along the right hemisphere while the other exposure was along the left hemisphere; the side of presentation was counterbalanced for each sex. The intensity of the field along the nonexposed hemisphere was less than 0.1, i.e., 0.1–0.2 microT, of the magnitudes within the exposed hemisphere. Immediately after each exposure, the subject completed an Exit Questionnaire and was then administered Spiegel's Hypnosis Induction Profile (Spiegel & Spiegel, 1978) by the first author who was not familiar with the primary hypothesis of the experiment.

The Hypnosis Induction Profile scores which range from 0 to 10, as defined by Spiegel and Spiegel (1978), and the scores (0 = never, 1 = at least once, 2 = more than once) for (1) "I felt the presence of someone," (2) "I felt detached from my body," (3) "The ideas did not come from my own mind" (ego-alien intrusions), (4) "I felt spinning," (5) "I felt vibrations through my body," (6) "There were odd smells," (7) "I experienced fear," (8) "I felt as if I were somewhere else," and (9) "I felt something like sexual arousal" were computed for each subject for the two exposures. In addition, scores for experiences of visual sensations in the upper visual field, left visual field, or right visual field (inferences of temporal lobe and either right- or left-hemispheric activation, respectively), and the over-all rating of pleasantness (5 points, $-2$ to $+2$) of the experiences during the magnetic-field stimulation were calculated from the Exit Questionnaires. Also, scores on Vingiano's Hemisphere Questionnaire (Vingiano, 1989), which had been administered in a classroom setting approximately two to four weeks before the experiment, were calculated. All analyses involved SPSS software on a VAX 4000 computer.

One-way analyses of variance confirmed the primary hypothesis that women should report statistically more frequent ($F_{1,46} = 8.16$, $p < .01$) episodes ($M = .27$, $SD = .41$) of a sensed presence than would men ($M = .02$, $SD = .10$). Given the heterogeneity of the variance, a Kruskal-Wallis test was conducted; the gender differences were still statistically significant ($\chi^2 = 8.06$, $p < .01$). Women also reported more ($F_{1,46} = 4.56$, $p < .05$; Kruskal-Wallis $\chi^2 = 4.21$, $p < .05$) frequent episodes of experiences that "did not come from their own minds," i.e., ego-alien intrusions ($M = .17$, $SD = .32$), than did the men ($M = .02$, $SD = .10$) and more intense ($F = 6.29$) vibrations moving through their bodies ($M = .88$, $SD = .58$) than did the men ($M = .44$, $SD = .63$).

However, there were no significant sex differences (mean and $SD$ in parentheses) with respect to the Hypnosis Induction Profile score ($M = 5.6$, $SD = 2.8$), Vingiano's Hemispheric Index (1989) ($M = .62$, $SD = .19$), the over-all pleasantness of the experiences during the magnetic-field stimulation ($M =$

1.0, $SD = .8$) or the correlative spinning experiences ($M = 3.0$, $SD = .49$), smells ($M = .06$, $SD = .19$), fear ($M = .16$, $SD = .39$), feeling as if the self is somewhere else ($M = .44$, $SD = .59$), or sexual arousal ($M = .10$, $SD = .23$). The proportion of people who experienced sensations in the upper visual field (38%), left visual field (17%), and right visual field (15%) did not differ between the sexes. Because the difference in incidence of sensed presence between men and women was marked, data were analyzed separately by gender.

For the women, the sense of a presence was significantly ($p < .05$) correlated (*rho*) with scores on the Hypnosis Induction Profile (.50) and feeling "somewhere else" (.36) while the experience of ego-alien intrusions was associated with increased scores that suggest right hemisphericity (.41). The only other statistically significant correlations were with the intensity of body vibrations during the magnetic-field exposure and correlative visual sensations along the left (*rho* = .54) but not the right (*rho* = .12) peripheral fields, the incidence of sexual arousal and ego-alien intrusions (*rho* = .36), and the intensity of internal vibrations and the over-all rating of the pleasantness (*rho* = .53) of the experience during the application of the magnetic fields.

For the men, the scores on the Hypnosis Induction Profile were significantly associated with the pleasantness of the over-all experience during the magnetic-field stimulation (*rho* = .42) and the intensity of body vibrations (*rho* = .47). Although neither hemisphericity nor the induction scores were significantly associated with any of the other subjective experiences during the magnetic-field stimulation, the incidence of a sensed presence was associated with sexual arousal (*rho* = .44) while ego-alien experiences were more commonly associated with visual sensations along the left visual field; the effect was still present (partial $r = .39$, $p < .05$) when the variance associated with right-field experiences had been removed; when the incidence of left visual-field stimulation was held constant, the association between ego-alien intrusions and left visual stimulations ($r = -.28$, $p = .10$) was not statistically significant.

To control for the individual's baseline of endorsement for different subjective experiences, the relative proportion of experiences was calculated (the score for each item divided by the mean of all items). The mean score for all of the subjective experiences was significantly ($F = 4.70$, $p < .05$) higher for the women ($M = .36$, $SD = .19$) than for the men ($M = .23$, $SD = .21$) and was significantly associated with scores on the Hypnosis Induction Profile for the women (*rho* = .41) but not for the men (*rho* = .10). The relative proportion of sensed presence was still significant ($F = 4.64$, $p < .05$) for the women ($M = .63$, $SD = 1.10$) relative to that for the men ($M = .09$, $SD = .44$) and was still significantly correlated with scores on the Hypnosis Induction Profile for the

women (*rho* = .48) but not for the men (*rho* = .15). The relative proportion of a sensed presence was also associated with the incidence of admission of sexual arousal for men (*rho* = .43) and women (*rho* = .42); measures (proportions) for ego-alien intrusion and out-of-body experiences were not associated significantly with sexual arousal or with inferences of either suggestibility or hemisphericity.

The most important observation in this study was the greater incidence of a sensed presence among the normal women than the normal men. This gender difference is commensurate with the vectorial cerebral hemisphericity hypothesis (Persinger, 1993) which states that any neurocondition (including sexual dimorphism) which enhances the probability of intercalation between the left and right temporoparietal regions should increase the likelihood of the brief experience of a sense of a presence. If enhanced corpus callosal size within the region which mediates temporoparietal intercalation occurs in women (de Lacosta-Utamsing & Holloway, 1982; Reite, Cullum, Stocker, Teale, & Kozora, 1993), then more frequent intrusions of right-hemispheric processes into left-hemispheric awareness are expected. The experience of this right-hemispheric equivalent to the left-hemispheric sense of self would be "the sense of a presence"; only the women exhibited a significant association between the depth of hypnotic induction, a presumably right hemispherically or dissociative activating process, and the incidence of a sensed presence.

There were also similarities between the men and women. Both sexes associated the pleasantness of the experiences during magnetic-field stimulation with the intensity of the "sensation of vibrations moving through the body." Sexual arousal, which we have not investigated previously, was also associated with the nonself experiences. For men, sexual arousal was associated with a sensed presence while for the women these sensations were associated with experience of ego-alien intrusions. We have reported clinical cases (e.g., Makarec & Persinger, 1987) of normal young women who reported sexual arousal and experiences of sexual demands from "entities" which were attributed to ego-alien sources; both of these women exhibited marked elevations in complex partial epileptic-like signs and right hemisphericity as defined by Vingiano (1989). The results of these studies suggest that the modern analogues of the medieval succubi and incubi, perhaps now manifested within themes of extraterrestrial alien abductions (Evans, 1984; Persinger, 1992), may be more frequent than suspected. This work also suggests that these phenomena are *normal* experiences when vision and audition are attenuated and weak stimuli promote hemispheric intercalation of intrinsic images. Like a neural net whose major sensory inputs have been removed, the continuous output reflects the amplification of the system's own "internal" wiring.

## REFERENCES

CORSI-CABRERA, M., HERRERA, P., & MALVIDO, M. Correlation between EEG and cognitive abilities: sex differences. *International Journal of Neuroscience*, 1989, 45, 133-141.

DE LACOSTA-UTAMSING, C., & HOLLOWAY, R. L. Sexual dimorphism in the human corpus callosum. *Science*, 1982, 216, 1431-1433.

EVANS, H. *Visions, apparitions and alien visitors*. Wellingborough, Northamptonshire: Aquarian, 1984.

MAKAREC, K., & PERSINGER, M. A. Geophysical variables and behavior: XLII. Negative correlation between accuracy of card-guessing and geomagnetic activity: a case study. *Perceptual and Motor Skills*, 1987, 65, 105-106.

PERSINGER, M. A. "Sudden remembering" of early childhood memories and specific neuropsychological indicators: implications for claims of sexual abuse and alien visitation/abduction experiences. *Perceptual and Motor Skills*, 1992, 75, 259-266.

PERSINGER, M. A. Vectorial cerebral hemisphericity as differential sources for the sensed presence, mystical experiences and religious conversions. *Psychological Reports*, 1993, 76, 915-930.

REITE, M., CULLUM, C , STOCKER, J., TEALE, P., & KOZORA, E. Neuropsychological test performance and MEG-based brain lateralization: sex differences. *Brain Research Bulletin*, 1993, 32, 325-328

RICHARDS, P. M., PERSINGER, M. A., & KOREN, S. A. Modification of activation and evaluation properties of narratives by weak complex magnetic field patterns that simulate limbic burst firing. *International Journal of Neuroscience*, 1993, 71, 71-85.

SPIEGEL, H., & SPIEGEL, D. *Trance and treatment: clinical uses of hypnosis*. New York: Basic Books, 1978.

VINGIANO, W. Hemisphericity and personality. *International Journal of Neuroscience*, 1989, 44, 263-274.

*Accepted November 9, 1994.*